

SCHEMATIC DIAGRAMS
FOR
AVIONICS INTERMEDIATE COURSE
CLASS C7
C-100-2012

UNIT XII
AIRBORNE RADAR SYSTEM TRAINING
DEVICE 11D13

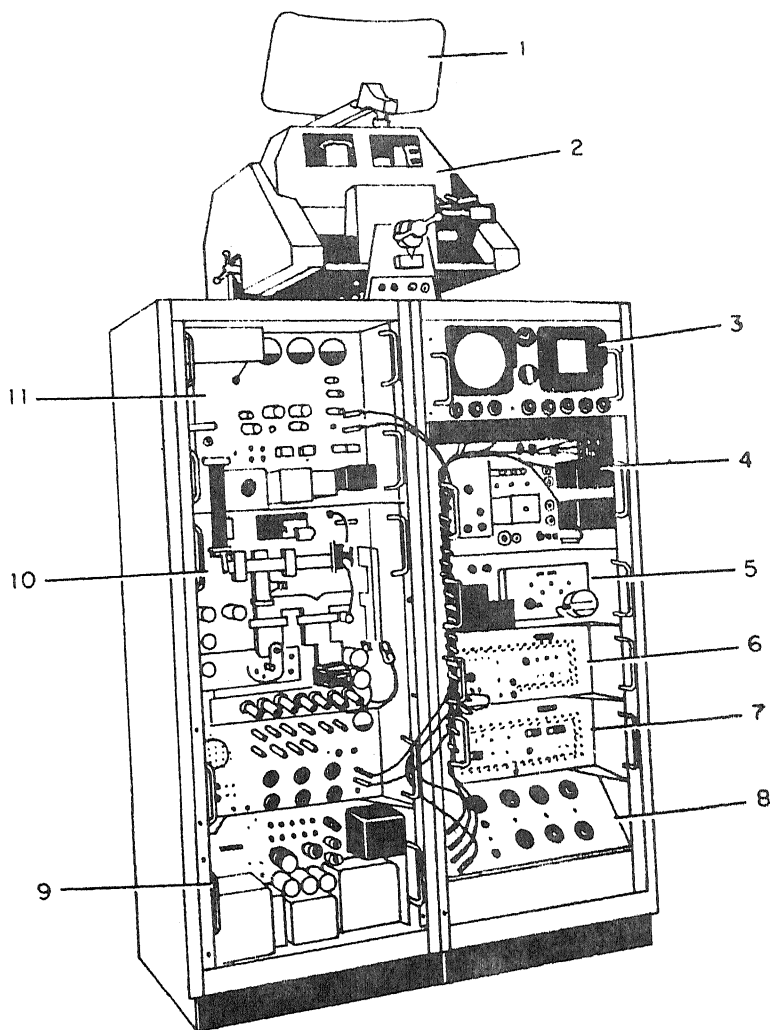
CNTT-M1620
PREPARED BY
NAVAL AIR TECHNICAL TRAINING CENTER
NAVAL AIR STATION MEMPHIS
MILLINGTON, TENNESSEE

PREPARED FOR
CHIEF OF NAVAL TECHNICAL TRAINING

LIST OF ILLUSTRATIONS

<u>NUMBER</u>	<u>TITLE</u>	<u>PAGE</u>
1	Basic Fire Control Radar Maintenance Training Set, Device 11D13	1
2	Technical Data, Device 11D13A and 11D13B	2
3	Interconnecting Cabling Diagram, Device 11D13	3
4	Devices 11D13 and 11D13A, Operational Block Diagram	4
5	Transmitter Unit Block Diagram	5
6	Schematic, Transmitter Unit 100	6
7	Receiver Unit 200 and 900, Block Diagram (Sheet 1 of 2)	7
7	Receiver Unit Power Supply, Block Diagram (Sheet 2 of 2)	8
8	Schematic, Receiver Unit 200 (Sheet 1 of 2)	9
8	Schematic, Receiver Unit 200 (Sheet 2 of 2)	10
9	Schematic, Power Supply Unit 700	11
10	Schematic, Synchronizer Power Supply (Part of 1600 Unit)	12
11	PPI Indicator Deflection Unblanking and Video Signals Block Diagram	
12	Azimuth Marker block	
13	Schematic, Indicator (Sheet 1 of 2)	
13	Schematic, Indicator (Sheet 2 of 2)	
14	B-Scope, A-Gun Block	
15	Gate Multivibrator	
16	A-Gun Waveforms and	
17	B-Gun Simplified Block	
18	B-Gun Waveforms and	
19	B-Gun Waveforms and	

20	B-Scope, B-Gun Block Diagram	23
21	Schematic, Indicator Display Unit 1500 (Sheet 1 of 3)	24
21	Schematic, Indicator Display Unit 1500 (Sheet 2 of 3)	25
21	Schematic, Indicator Display Unit 1500 (Sheet 3 of 3)	26
22	Synchronizer Unit 1600, Block Diagram	27
23	Schematic, Synchronizer Unit 1600	28
24	Range and Angle Tracking Unit 1900, Block Diagram	29
25	Schematic, Range and Angle Tracking Unit 1900	30
26	Device 11D13A Functional Block Diagram	31



- | | |
|---|------------------------------------|
| 1. ANTENNA UNIT 850 | 7. RANGE TRACKING UNIT 1900 |
| 2. ANTENNA STABILIZATION PLATFORM UNIT 1000 | 8. TARGET GENERATOR UNIT 2300 |
| 3. INDICATOR DISPLAY UNIT 1500 | 9. INDICATOR POWER SUPPLY UNIT 700 |
| 4. INDICATOR VIDEO UNIT 1400 | 10. RECEIVER/DUPLEXER UNITS |
| 5. ANTENNA CONTROL GROUP UNIT 1800 | 200/300/900 |
| 6. SYNCHRONIZER UNIT 600 | 11. TRANSMITTER UNIT 100 |

**BASIC FIRE CONTROL RADAR MAINTENANCE TRAINING SET,
DEVICE 11D13A**

Figure 1.

TECHNICAL DATA

DISPLAYS

Power 8800 to 9600 megahertz
on Freq. 1000 watts maximum
1000 hertz
1 microsecond

Centered PPI
Range Markers

Fire Control

Search

10 db maximum
30 megahertz
4.0 megahertz

Centered PPI

B-Scope
Artificial Horizon
Acquisition Symbol

Track

B-Scope
Artificial Horizon
Range Gate Marker
Range Circle
Steering Dot
Breakaway

Bomb Director

Offset PPI with Range
Azimuth Crosshairs
Expanded display center
about Range/Azimuth
cursors

RANGES

Search

6,000 yards
12,000 yards

Fire Control/ Bomb Director

10,000 yards
40,000 yards
80,000 yards

RANGE TRACKING

Speed Range

2000 knots
0 to 40,000 yards

TARGET GENERATOR

Range Bearing Elevation Range Rate Bearing Rate Elevation Rate

400 to 80,000 yards
0 to 360°
-45° to +45°
0 to 2,000 knots
0 to 10°/sec
0 to 10°/sec

ANTENNA OPERATION

Azimuth

Search Radar

Automatic: 6 rpm clockwise
Manual Slew: zero to 6
rpm either direction
Manual Position: 360°

Fire Control

Search: 60 degree sector,
2-bar scan. Sector center
adjustable, ±45 degrees.
Antenna nod of 6 degrees.
Searchlight: ±30 degrees
Tracking: ±10 degrees/
second minimum

Bomb Director

Automatic 60 degree
centered sector scan

Elevation

All Modes

Tracking

Stabilization

Manual tilt control ±45°
±10 degrees/second, min.

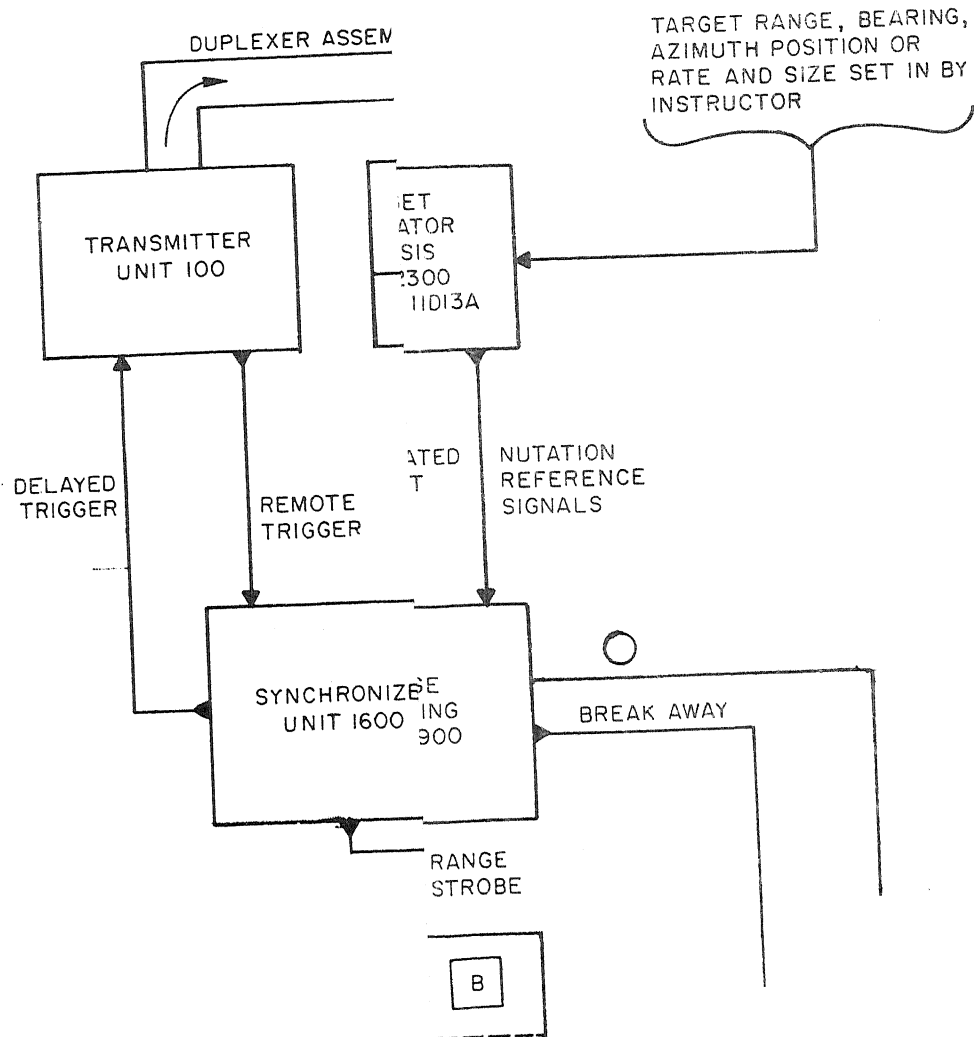
Pitch: ±45 degrees
Roll: ±15 degrees

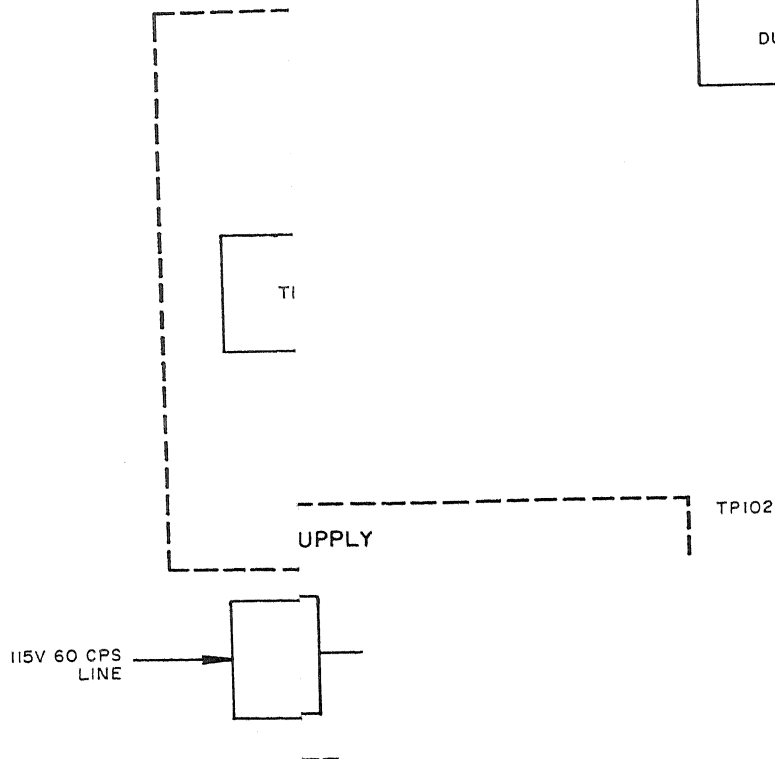
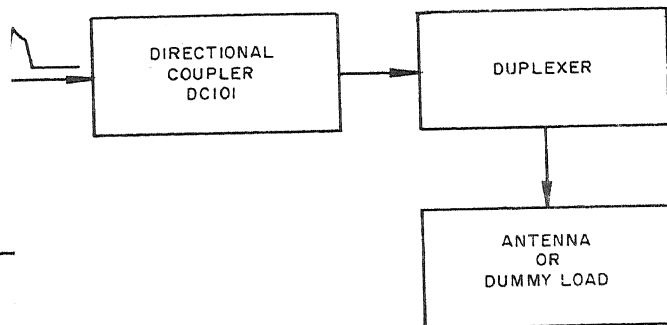
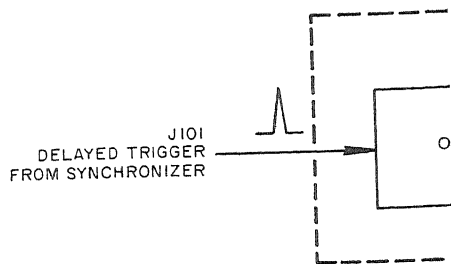
POWER

117-volt, 60-Hz single
phase, AC

NOTES

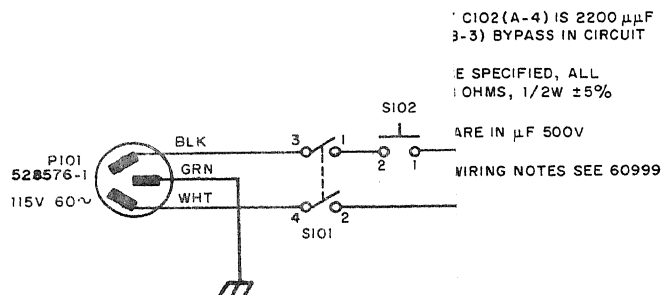
1. Unless otherwise noted, all cables are double-ended and are listed twice to facilitate location from either end.
2. Double asterisk(**) indicates triple branch cable. Each branch is listed twice to facilitate location from any end.
3. Dagger (†) indicates roll-back cable which is part of harness of unit indicated. Roll-back cables are listed once under the cable grouping for the associated major unit.
4. Refer to Figure 4-3 for relative location and routing of cables. Solid line indicates cable path in front of consoles, dashed line indicates cable path behind consoles. J1 at bottom of main console is a feed-through connector. Roll-back cables A1301-P1 through A1320-P1 and A1501-P1 through A1520-P1 (not shown) connect from individual modules to adjacent unit receptacle as listed.
5. J104 is power test jack in direct coupler DC101.
6. Unit power line cord plug into rail assembly
7. Connects antenna horn.
8. Bonding strap, to transmit
9. High voltage rate from on indicator (CRT).
10. Receptables i utilize a t adapter to lel-connect tacle.
11. Roll-back cal dangling co



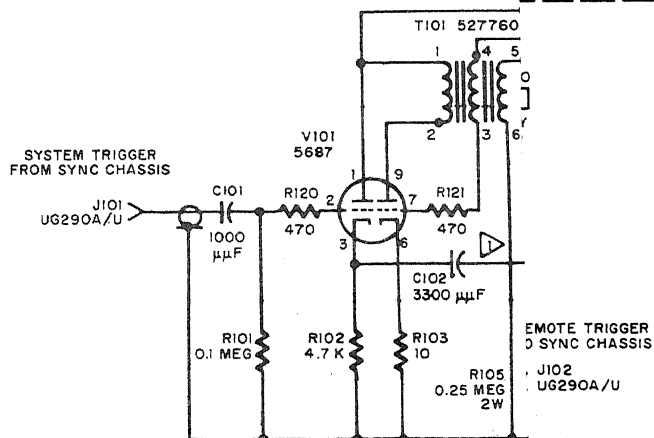


A

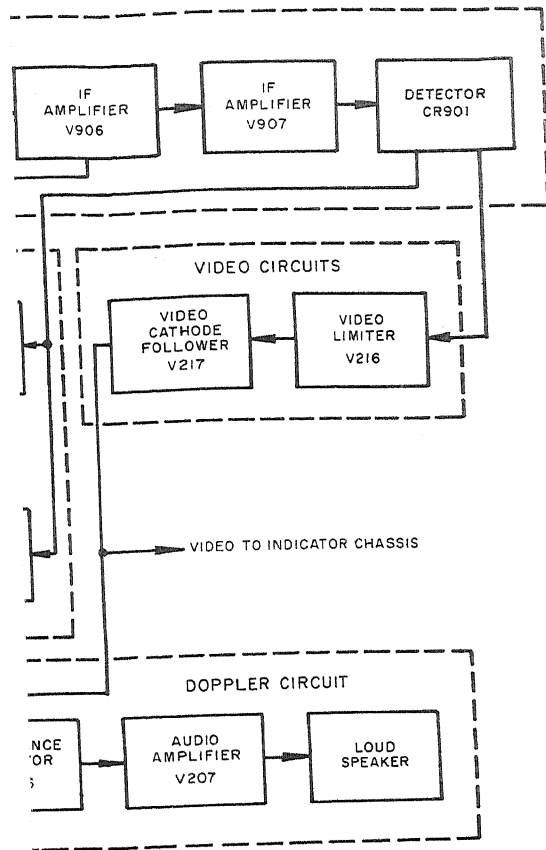
B



C



D



UNLESS OTHERWISE SPECIFIED:

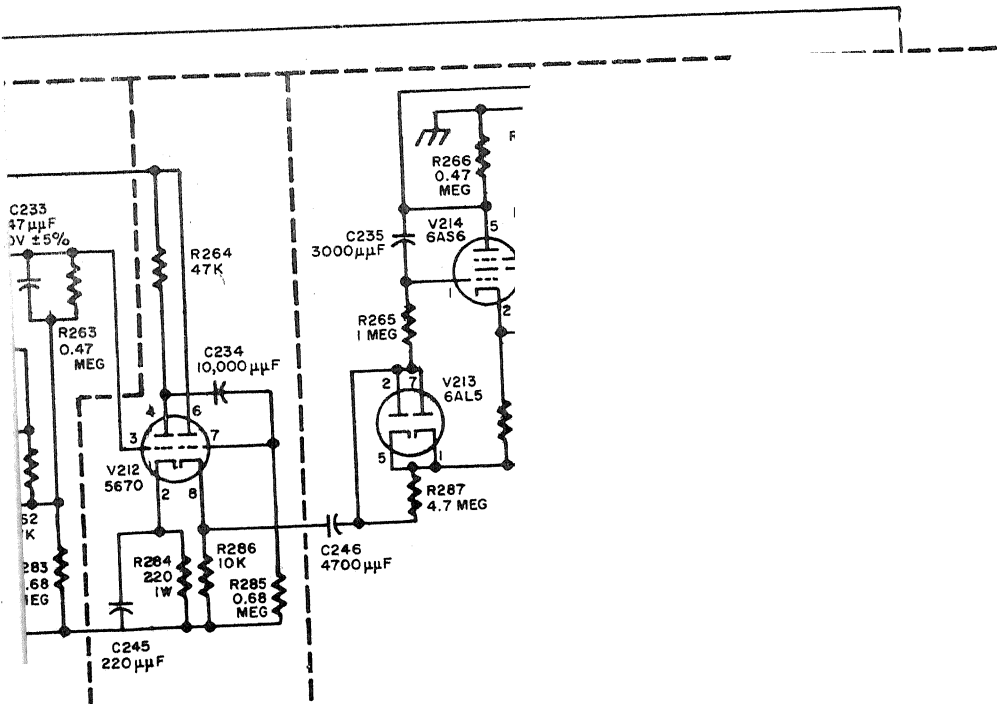
ALL RESISTORS ARE IN OHMS $1/2W \pm 5\%$

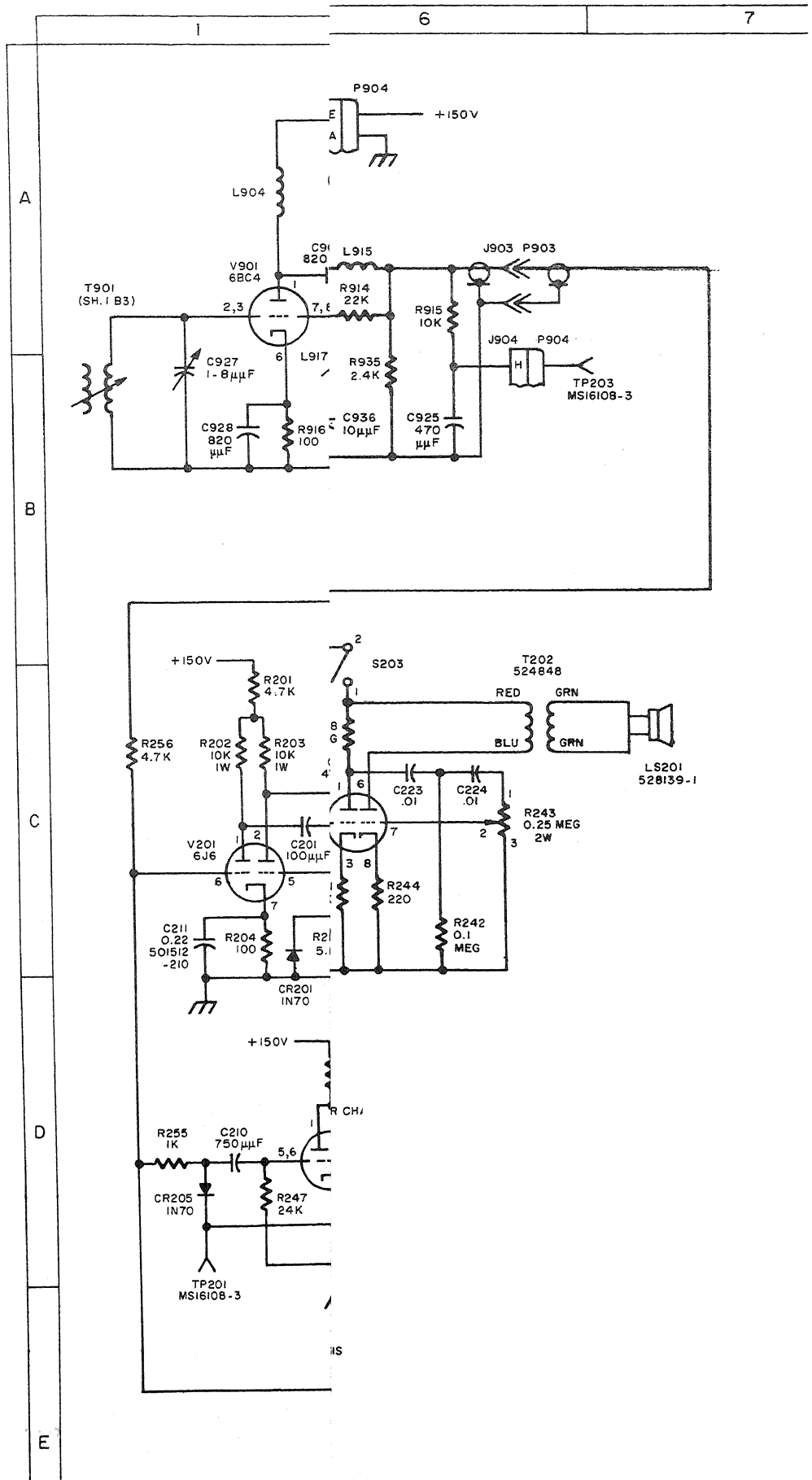
ALL CAPACITORS ARE IN μF $400V \pm 10\%$

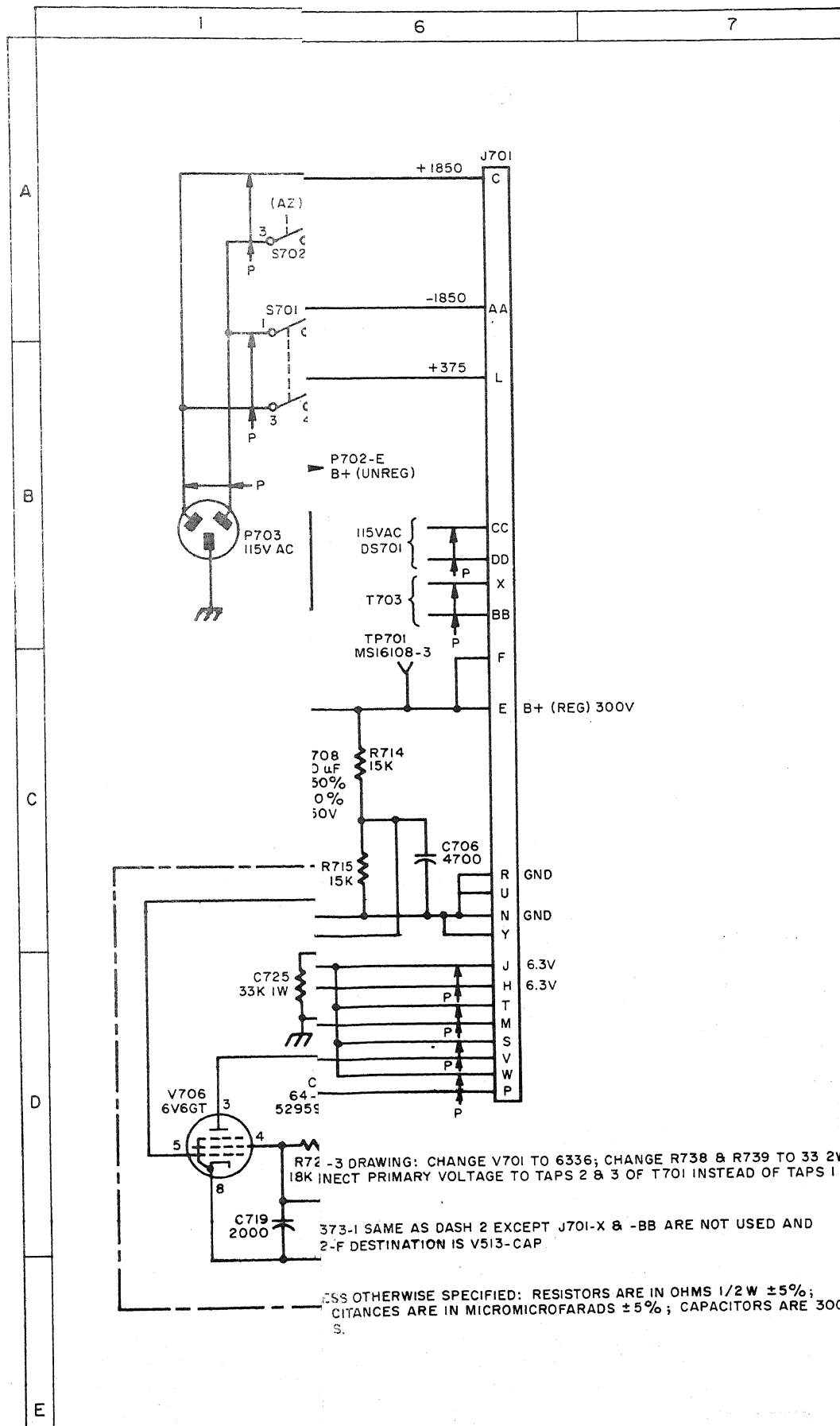
CAPACITORS IN μF ARE $500V \pm 5\%$

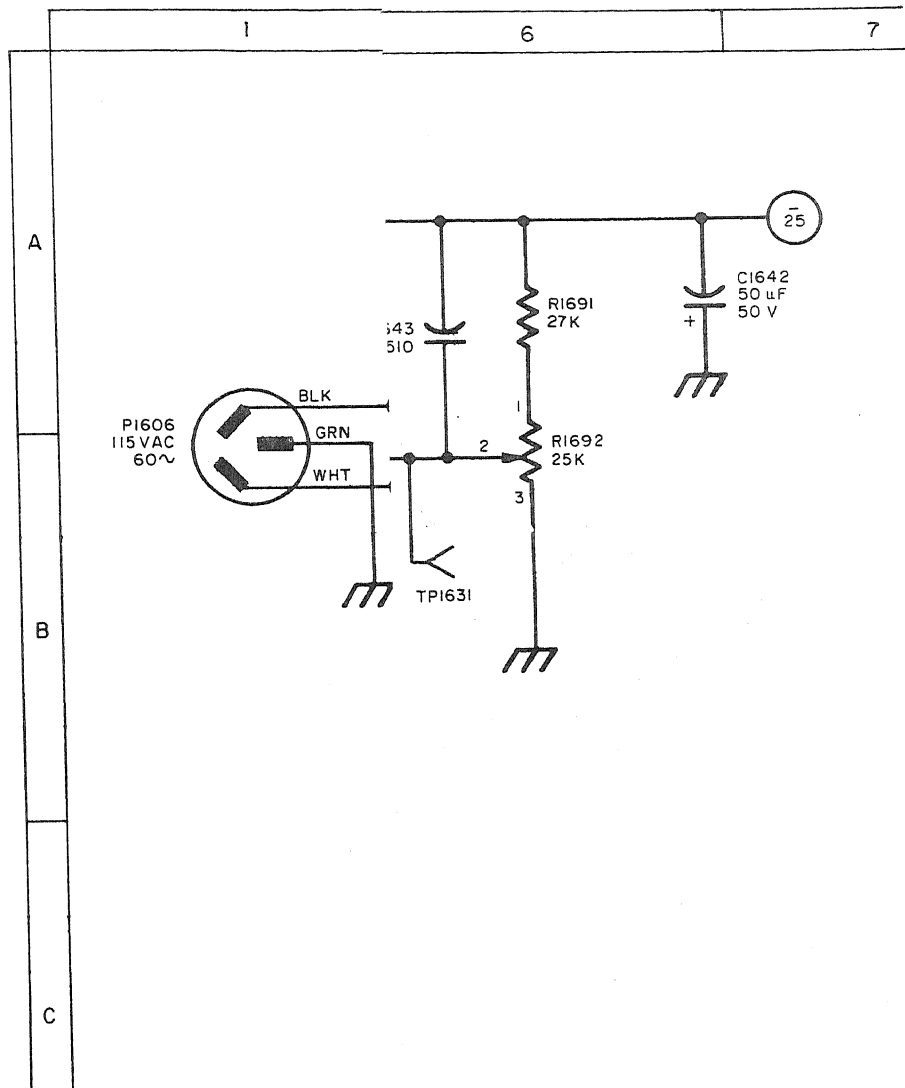
▷ THESE CAPACITORS ARE 600V (529746-1)

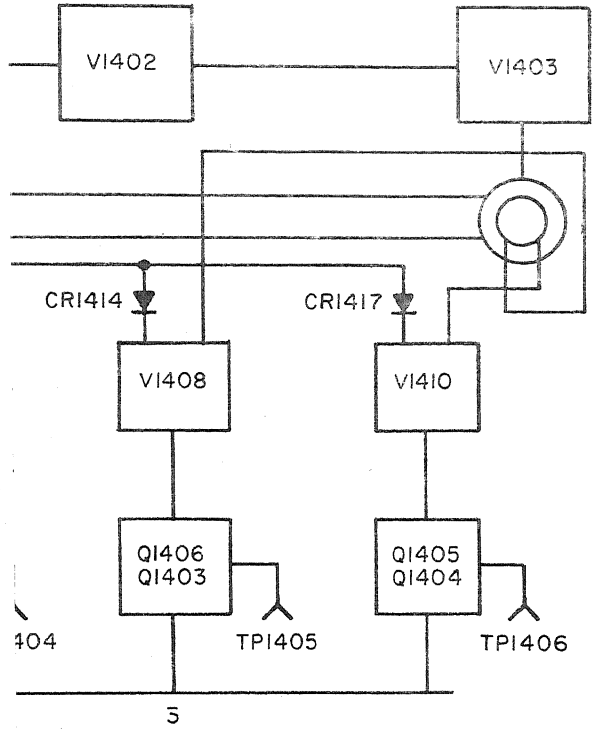
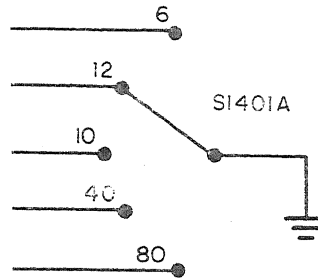
FOR ADDITIONAL WIRING NOTES SEE 60999



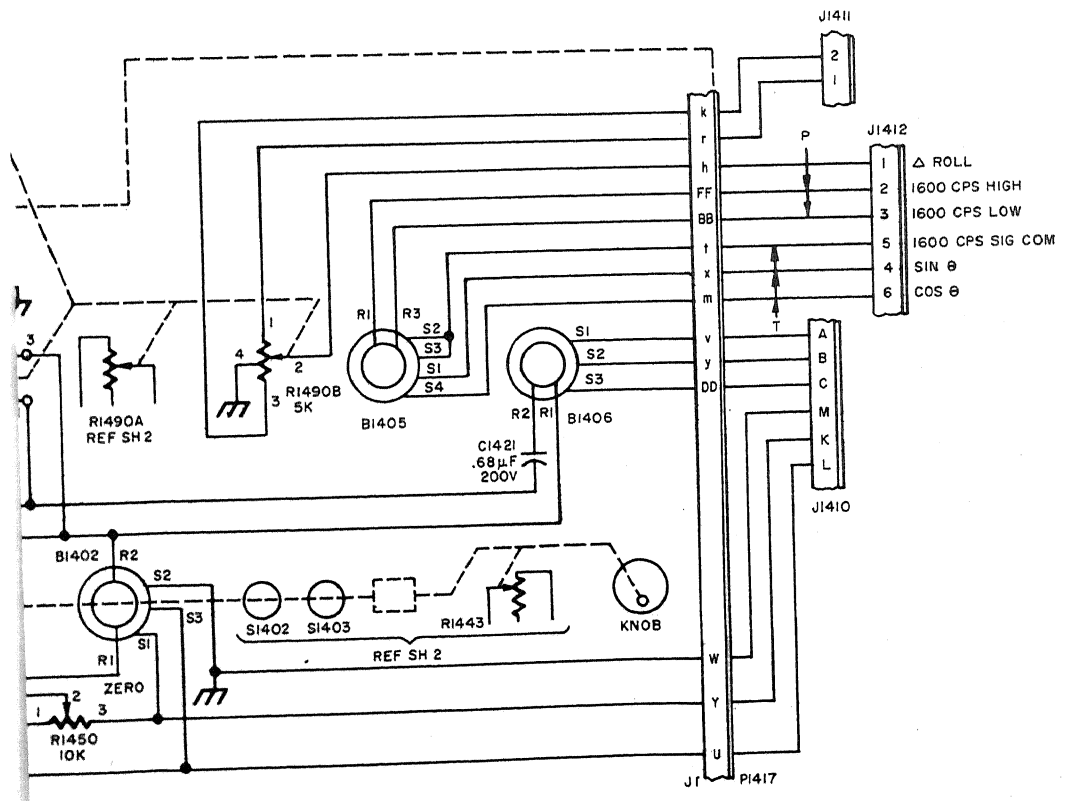


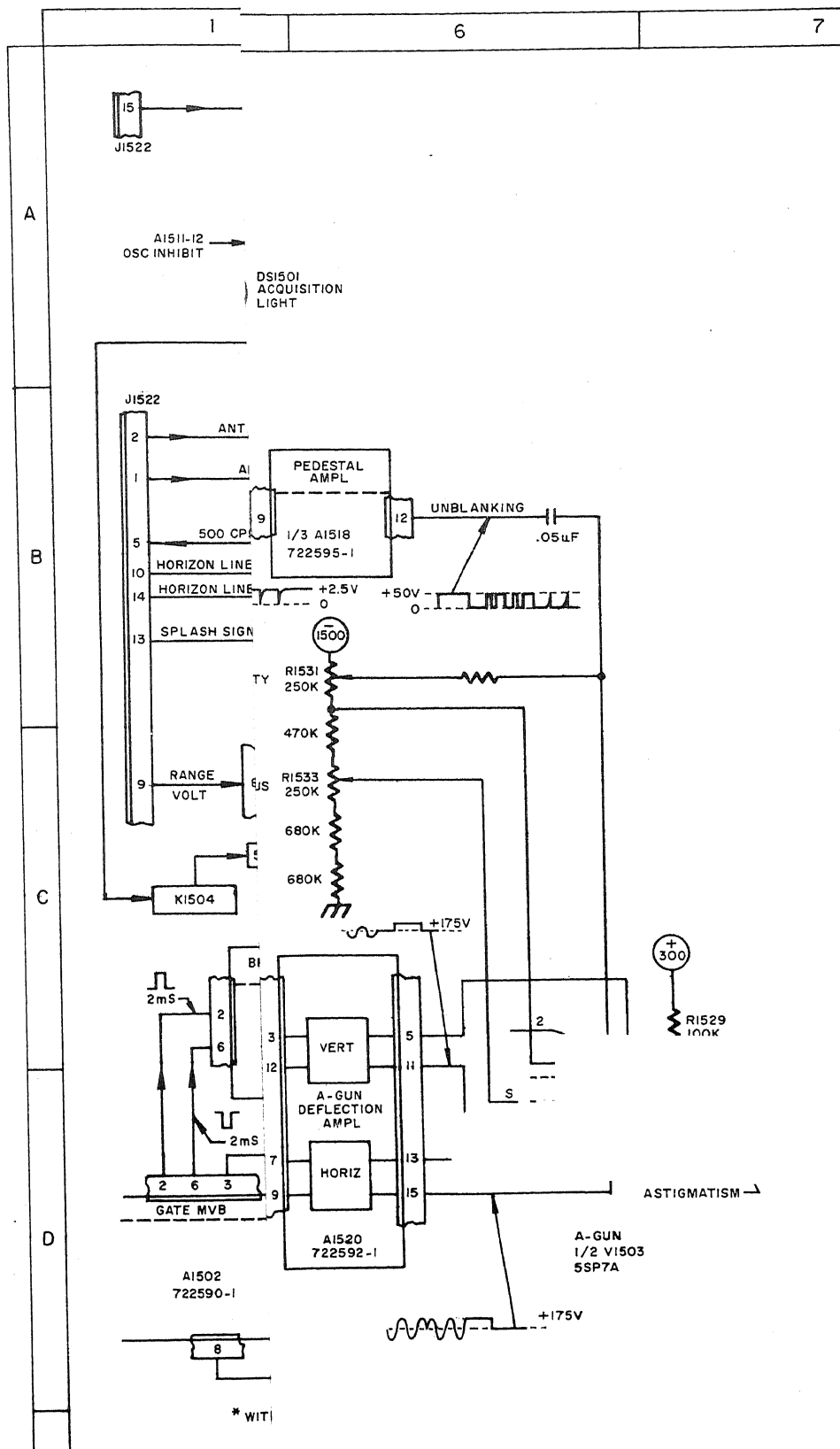






Deflection, Unblanking and
Block Diagram





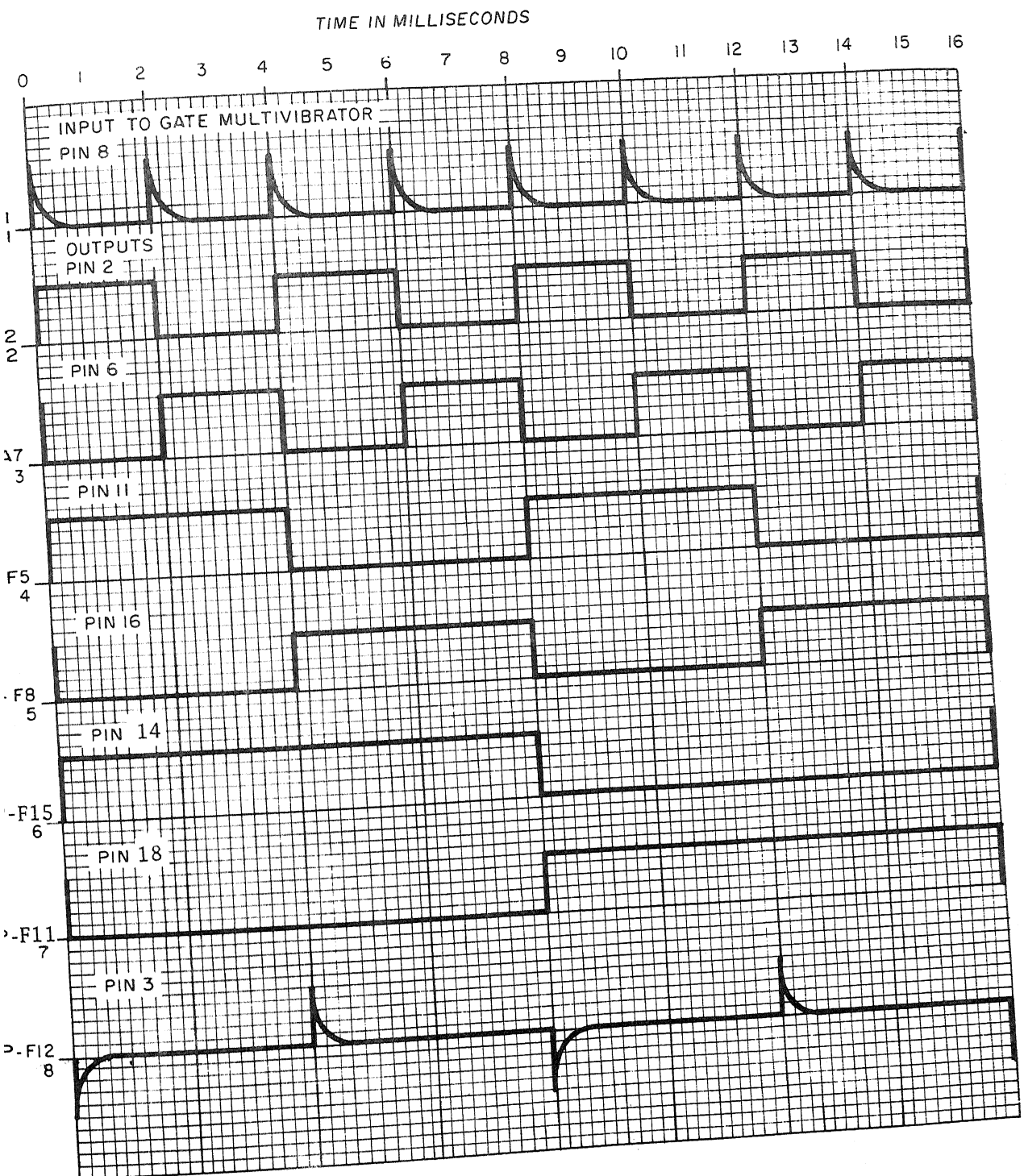


Figure 15. Gate Multivibrator A1502

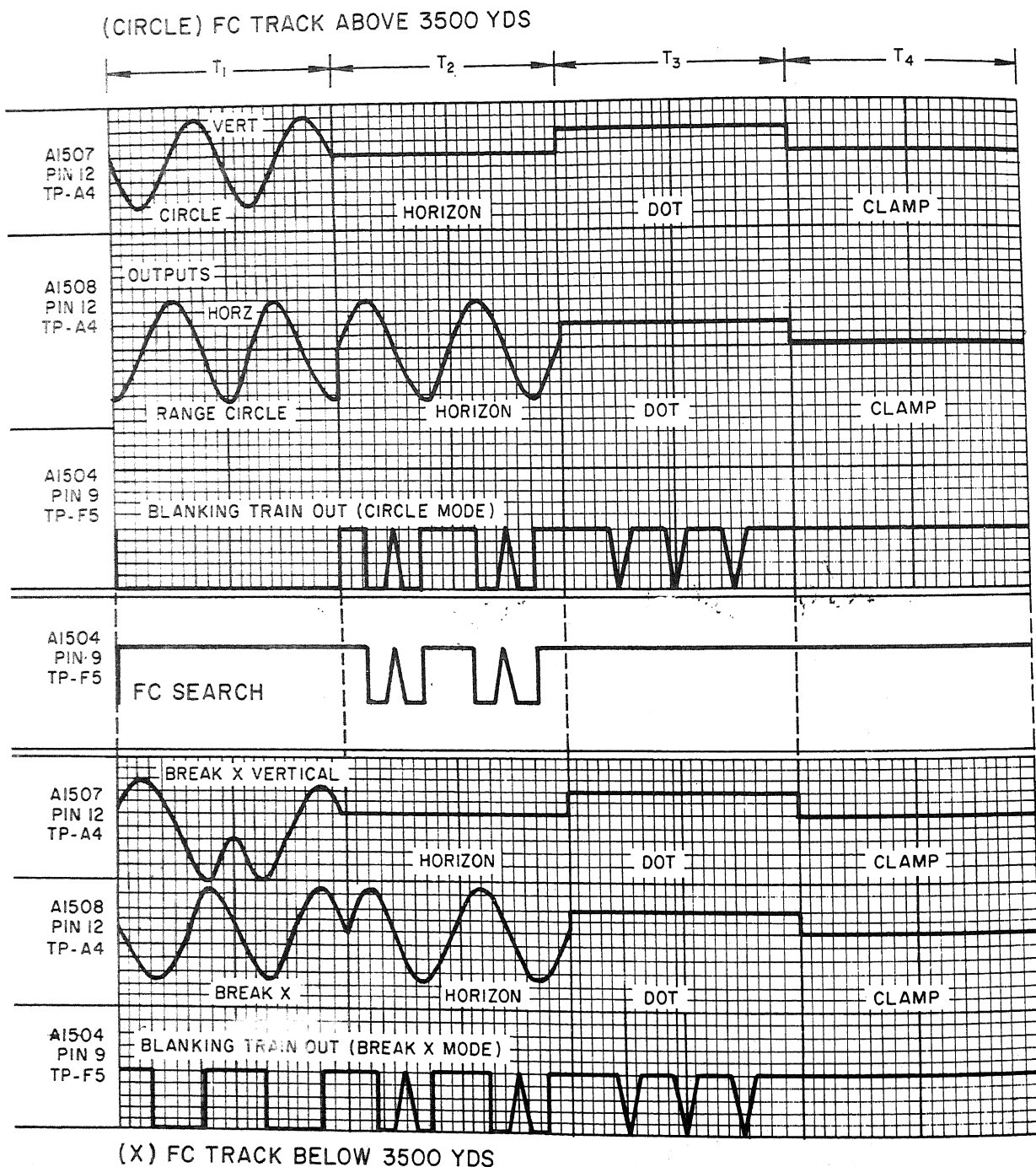
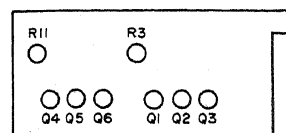
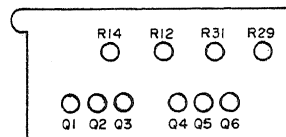
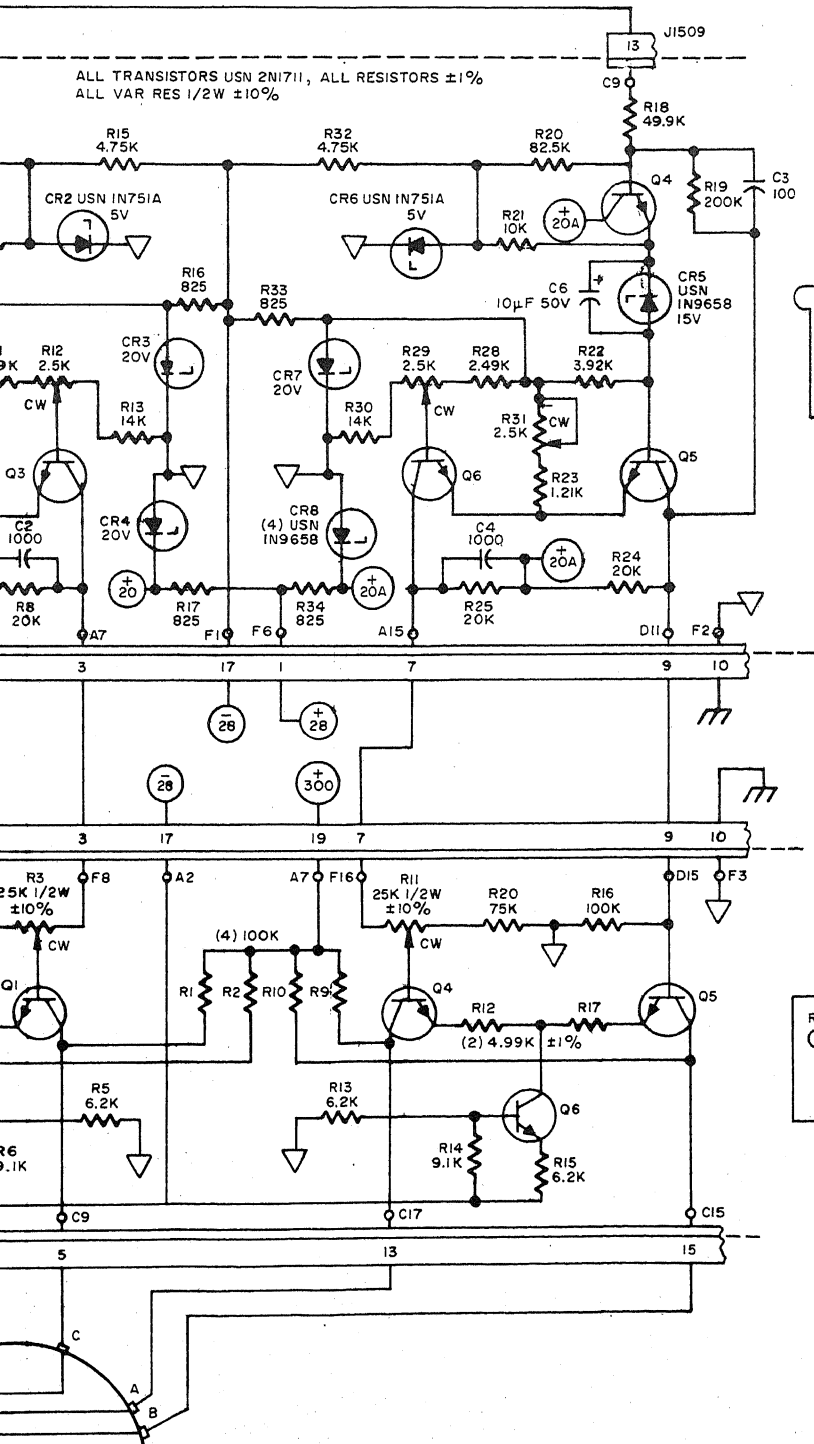
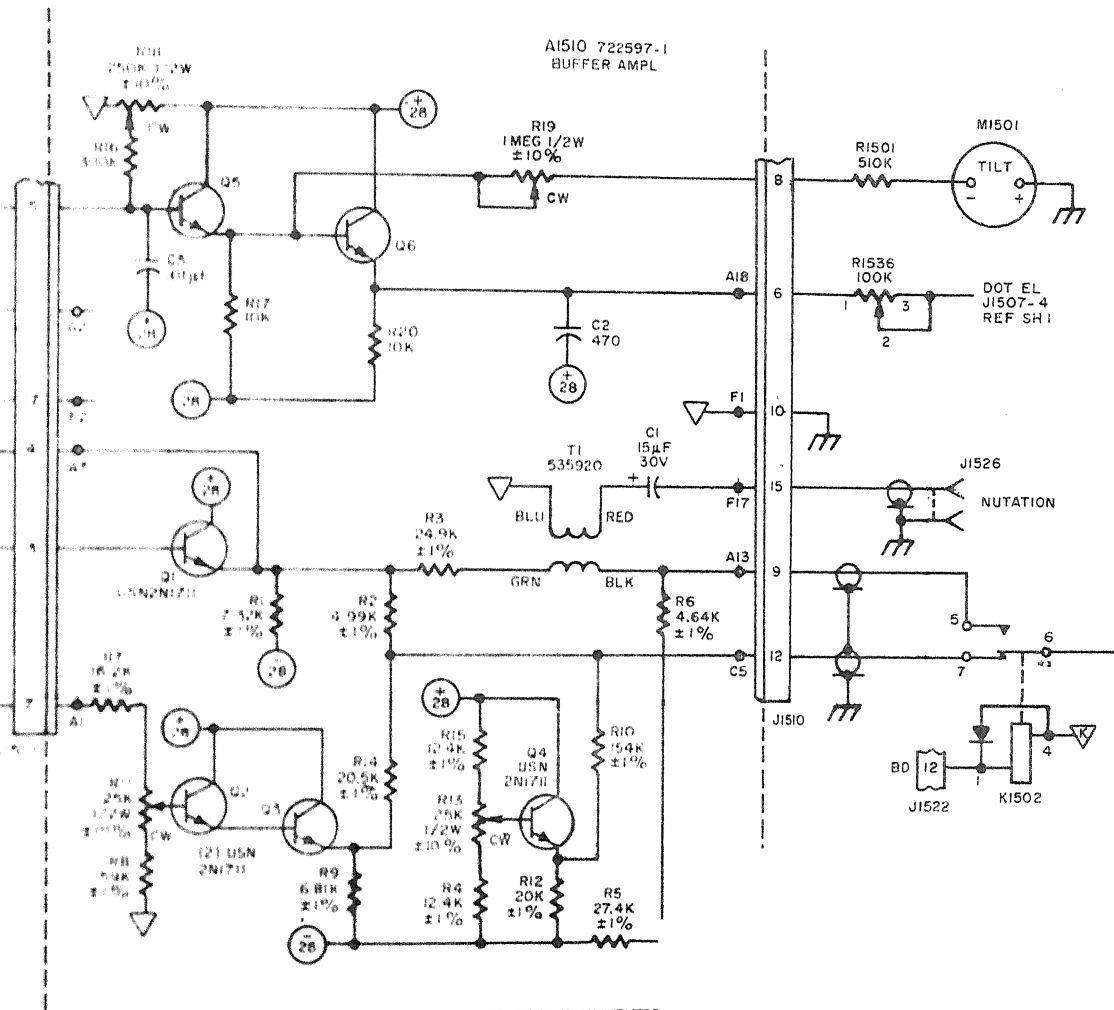
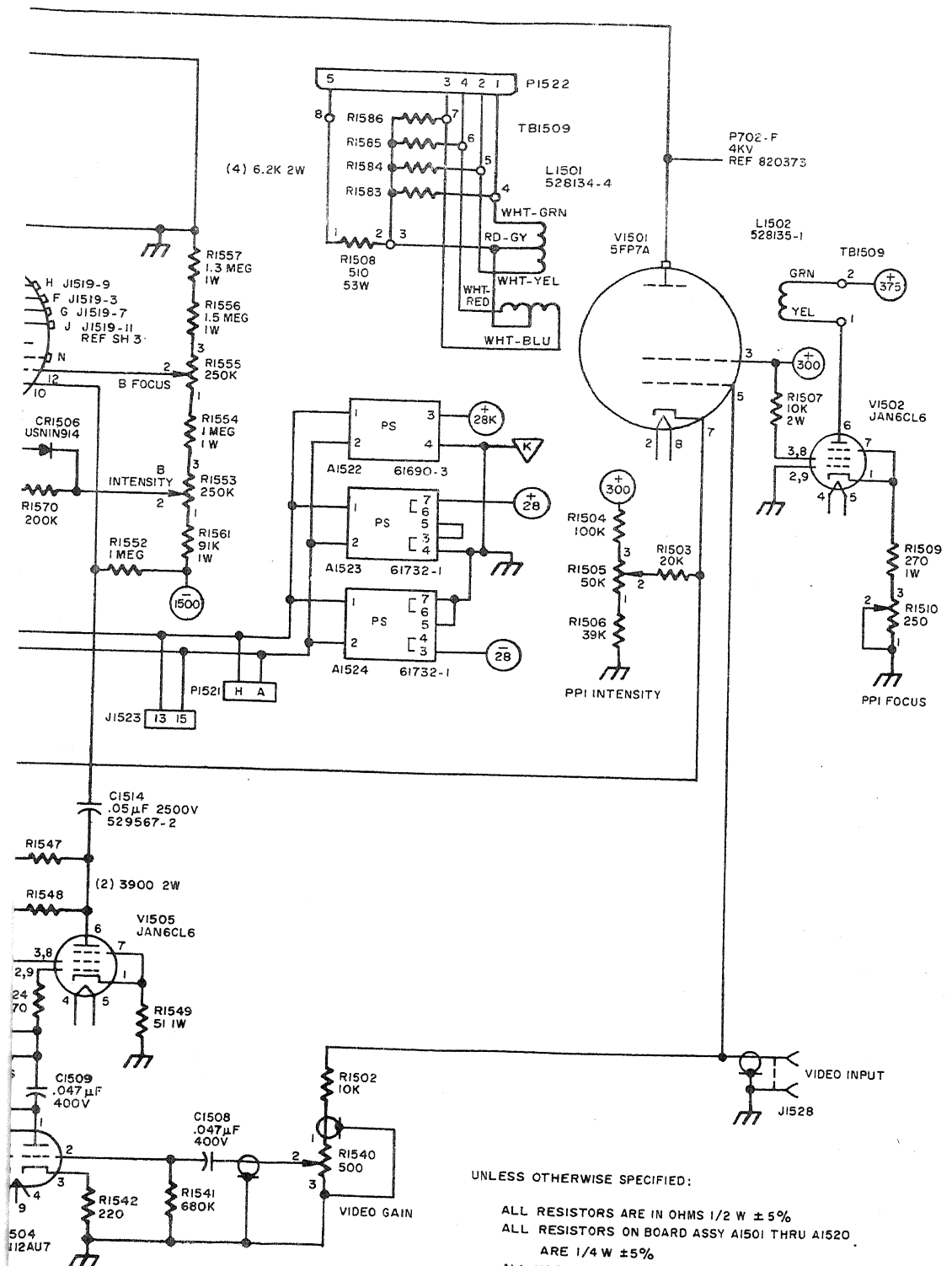
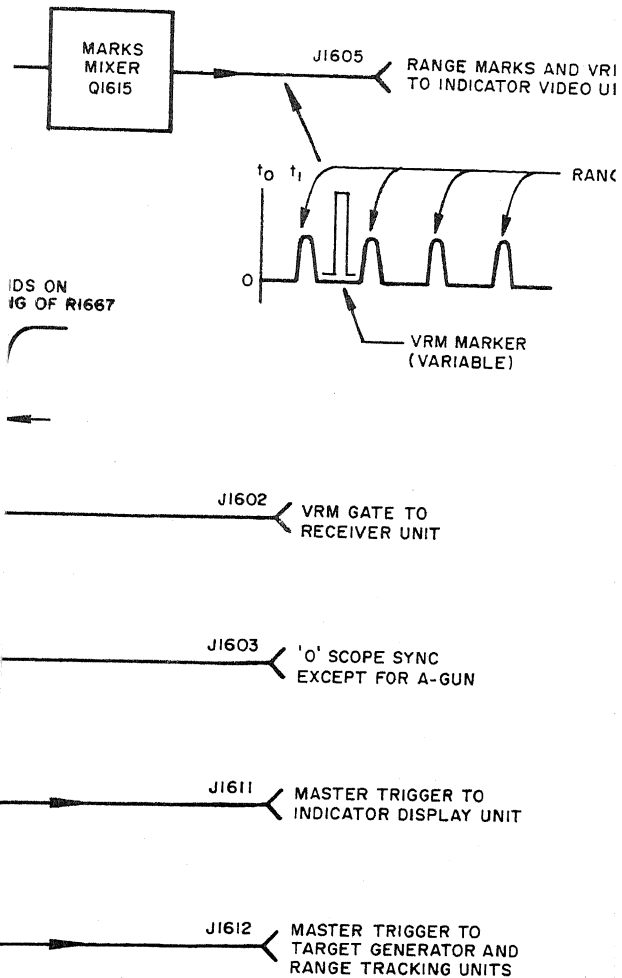
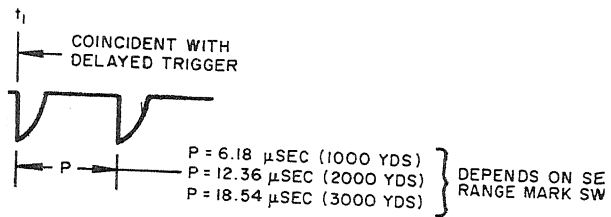


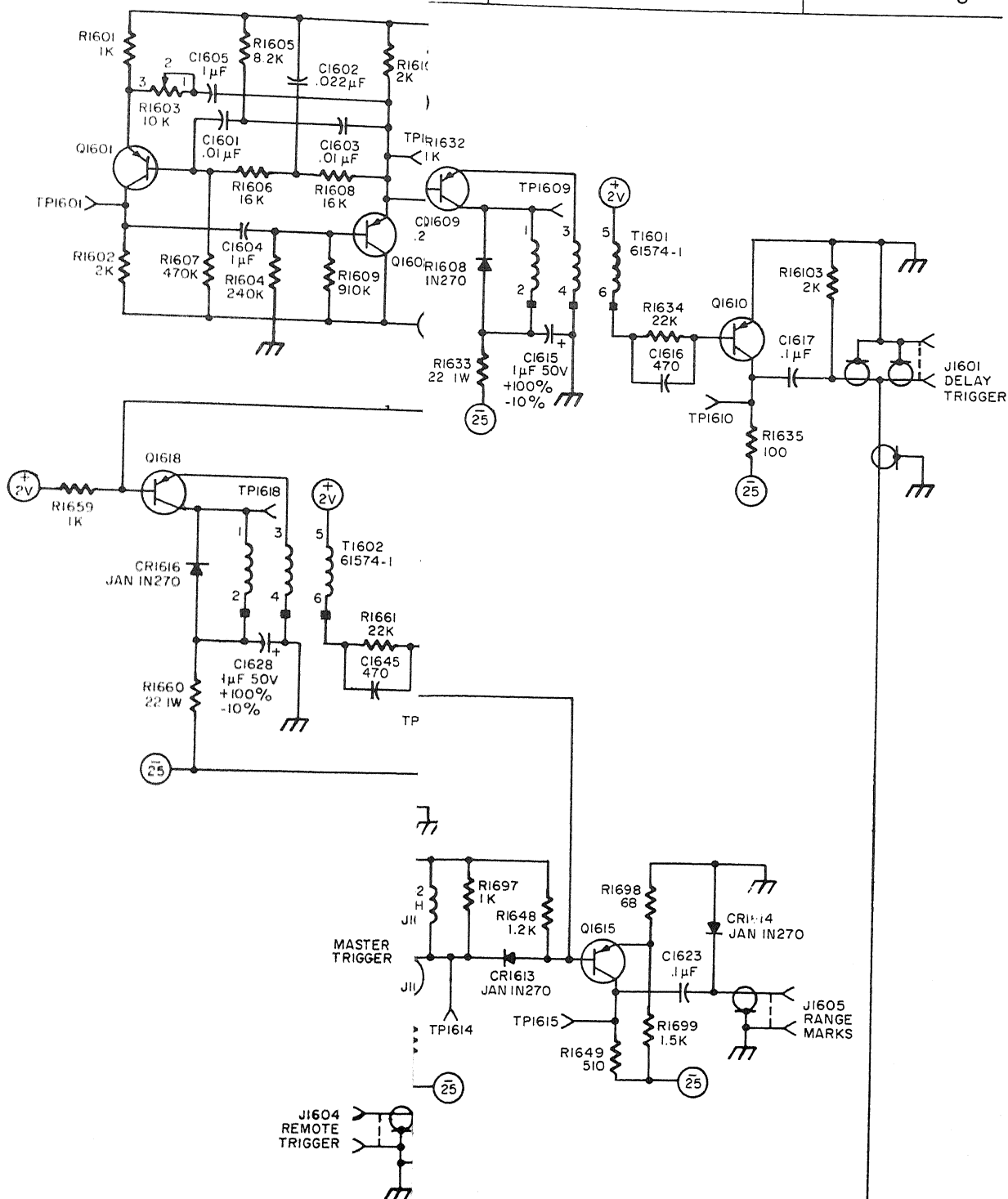
Figure 16. A-Gun Wave Forms and Sequencing









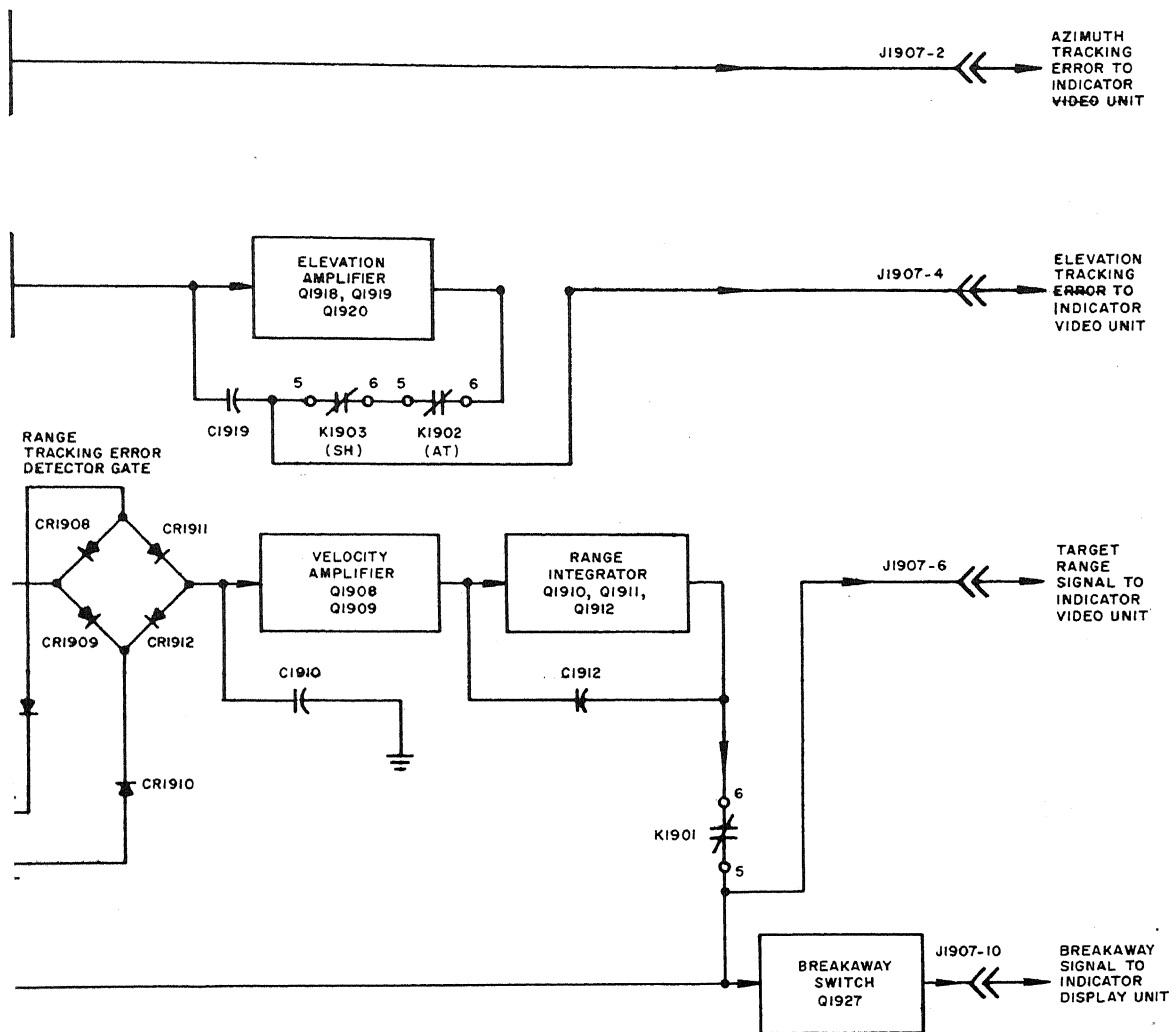


UNLESS OTHERWISE SPECIFIED:

ALL RESISTORS ARE IN OHMS 1/2W ±5%

ALL TRANSISTORS ARE 2N404A

ALL CAPACITORS ARE IN μF 500V ±5%



Range and Angle Tracking Unit 1900, Block Diagram

